

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A protective system for protection of a loading system for transfer of hydrocarbons between an installation on the sea bed and a floating vessel in areas exposed to drifting ice, comprising:

a submerged turret loading arrangement including a submerged loading/unloading buoy configured for introduction and releasable securement in a downwardly open receiving space in the vessel,

a flexible riser extending from the sea bed installation to the buoy, and configured to be securely connected to a corresponding pipe on board the vessel, and

a plurality of mooring lines connected to the buoy and extending outwards therefrom, the buoy and the mooring lines serving as an anchoring system allowing the vessel to weathervane, wherein the protective system further comprises:

a flexible riser protection configured to protect the riser from impacts by yielding to the force imposed by the ice when the riser is in an extended, load transferring mode, the upper end of the riser protection being attached to the loading/unloading buoy and the riser protection surrounding the riser, and

a protective structure of the installation located in or on the sea bed for protection of the riser when in a retracted position in a non-operative mode, wherein the protective structure contains means for storing the riser in a protected position when disconnected and retracted from the vessel.

2. (Previously Presented) The protective system according to claim 1, wherein the riser is protected at least along a portion of its length, the riser protection being suspended from the submerged turret buoy by means of a plurality of chains or wires.

3. (Previously Presented) The protective system according to claim 2, wherein the riser protection is formed by a plurality of separate, truncated conical elements, each being suspended from the chains or wires.

4. (Previously Presented) The protective system according to claim 3, wherein the conical elements have a smaller upper diameter and a larger lower diameter or vice versa.

5. (Previously Presented) The protective system according to claim 1, wherein the protective structure is equipped with a top portion being substantially flush with the adjacent sea bed, the top portion being provided with an opening communicating with the interior of the protective structure.

6. (Previously Presented) The protective system according to claim 5, wherein the protective structure is provided with a vertical, downwardly open cell located directly below the opening in the top portion.

7. (Previously Presented) The protective system according to claim 1, wherein the riser may be completely retracted into the protective structure when idle, the riser being stored on a reel arranged inside the protective structure.

8. (Previously Presented) The protective system according to claim 7, wherein the reel rotates around a horizontal axis, the riser being connected to a supply line for hydrocarbons by means of a swivel, allowing the reel to rotate relative to the supply line.

9. (Previously Presented) The protective system according to claim 1, wherein the riser protection may be completely retracted into a cell of the protective structure when the riser is not in use.

10. (Previously Presented) The protective system according to claim 9, wherein the riser protection comprises riser protection elements, the riser protection elements being stacked on top of each other in a retracted position inside the cell.

11. (Previously Presented) The protective system according to claim 1, wherein the riser protection, at its lower end, is equipped with a socket, configured to interact with a retaining means on the protective structure.

12. (Previously Presented) The protective system according to claim 11, wherein the lower ends of the supporting chains are attached to the socket.

13. (Previously Presented) The protective system according to claim 11, wherein the socket is equipped with locking means for securing the socket in a locked position with respect to the retaining means on the protective structure.

14. (Previously Presented) The protective system according to claim 13, wherein the riser protection comprises riser protection elements, the locking means are releasably arranged, enabling the socket to be lowered down into the lower part of the protective structure to a retracted position together with the protection elements in a stacked arrangement when the riser is idle.

15. (Previously Presented) The protective system according to claim 11, wherein a lower part of a cell wall of a cell of the protective structure is provided with a retaining means to support the socket when in a retracted position within the protective structure.

16. (Previously Presented) The protective system according to claim 5, wherein the opening at the top portion of the protective structure is provided with a flexible deflector, preventing soil from dropping down into the protective structure through the opening.

17. (Previously Presented) The protective system according to claim 11, wherein the socket has an upwardly protruding, conical shape configured to interact with a corresponding opening in a top slab of the protective structure, thereby preventing the socket from moving upwards.

18. (Previously Presented) The protective system according to claim 6, wherein a slot is provided in a cell wall of the cell adjacent the reel.

19. (Previously Presented) The protective system according to claim 18, wherein the slot has a height that is larger than a maximum expected vertical heave amplitude of the vessel and a width of the slot is larger than a diameter of the riser.

20. (Previously Presented) A method for protecting a loading system for transfer of hydrocarbons when mooring a vessel to a submerged turret buoy, comprising:

bringing a vessel into position above a submerged riser, the upper end of which is provided with the submerged turret buoy,

pulling the riser with the turret buoy upwards into engagement with corresponding means on the vessel, and

further lifting a flexible riser protection encompassing the riser upwards, the riser protection protecting at least an upper portion of the riser by yielding to the force imposed by ice when in a retracted position, the upper end of the riser protection being attached to the buoy and the riser protection surrounding the riser.

21. (Previously Presented) The method according to claim 20, wherein the riser is reeled out from a stored position on a reel on the sea bed.

22. (Previously Presented) The method according to claim 21, wherein the riser protection is raised towards the vessel from a retracted position on the sea bed to an extended position in the same operation as for lifting the riser.

23. (Previously Presented) The method according to claim 21, wherein the riser is reeled out from a reel located in a protective structure in the sea bed.

24. (Previously Presented) The method according to claim 23, wherein the riser is reeled out to such extent that a sagging bend is provided at the lower end of the riser, compensating at any time for possible heave caused by the vessel.

25. (Previously Presented) The method according to claim 20, wherein the riser and the riser protection may be completely retracted to an inactive position on a sea bed.

26. (Previously Presented) The method according to claim 20, wherein the riser and the riser protection are stored in a retracted position on a sea bed, a socket forming the lower end of the riser protection resting on a support inside a protective structure on the sea bed.

27. (Previously Presented) The method according to claim 26, wherein the riser, the socket and the riser protection and the submerged turret buoy are lifted upwards until the socket engages with an engagement means in a top slab of the protective structure, whereafter the riser and the submerged turret buoy are lifted further upwards towards the

vessel subsequently lifting the riser protection from a stacked position to an extended position.

28. (Previously Presented) The method according to claim 20, wherein the riser protection comprises a plurality of truncated, conical cylinders suspended from each other by means of chains or lines, the method further comprising stacking conical cylinders on top of each other during the retraction process.

29. (Previously Presented) A method for installing a riser protection system on a sea bed, comprising:

establishing a protective structure in the sea bed to protect a portion of the riser when in a retracted position, and

lowering a separate, prefabricated unit comprising a reel, a riser reeled on to the reel, and a top configured to form a top of the protective structure, down into the protective structure and connecting an end of the reeled riser to a supply line for hydrocarbons, the connection being achieved by means of a swivel, and

wherein an upper end of the riser is provided with a loading/unloading buoy.